

### For more information on diseases spread by ticks:

Massachusetts Department of Public Health  
Division of Epidemiology and Immunization  
(617) 983-6800 or toll-free at 1-888-658-2850  
[www.state.ma.us/dph](http://www.state.ma.us/dph)

### For more information on repellents and insecticides:

Massachusetts Department of Public Health  
Bureau of Environmental Health Assessment  
(617) 624-5757

National Pesticide Information Center  
1-800-858-7378  
[www.npic.orst.edu](http://www.npic.orst.edu)

### For more information on pesticide use:

Massachusetts Department of Food and Agriculture  
Massachusetts Pesticide Bureau  
(617) 626-1786

### Actual sizes of adult American dog ticks:



### Actual sizes of deer ticks:



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# Preventing Disease Spread By Ticks



*Adult female dog tick (shown on top) and adult female deer tick*

**Massachusetts Department of Public Health  
Division of Epidemiology and Immunization**

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## What are ticks?

Ticks are bugs that feed on the blood of mammals, birds, and reptiles.

**Dog ticks** and **deer ticks** are found throughout Massachusetts and may spread different disease causing germs when they bite you. Ticks go through a multiple-stage lifecycle that includes larval, nymphal, and adult stages. Ticks are most active during warm weather months (May-June for nymphs and October-May for adult ticks), but can be active year-round when temperatures are above freezing. Ticks are generally found in grassy, brushy, or wooded areas. Ticks do not fly or jump. They attach to animals or people that come into direct contact with them. Deer tick nymphs are the size of a poppy seed and deer tick adults are the size of a sesame seed. Adult dog ticks are about the size of a watermelon seed. (See page 8 for actual sizes.)



*Adult female dog tick*

## Dog ticks: What diseases can they spread?

**Rocky Mountain spotted fever (RMSF)** is a rare bacterial disease that usually presents as a high fever with severe headache and fatigue 2 to 14 days after being bitten by an infected dog tick. A rash that spreads to the palms of the hands and soles of the feet usually appears 3 to 5 days after the fever begins. In Massachusetts, cases occur most frequently in the southeastern part of the state, on Cape Cod, and on Martha's Vineyard.

**Tularemia** is caused by bacteria that can be spread to people in a number of ways, including through a bite of an infected dog tick. Symptoms vary depending on the way the germs are transmitted and usually begin between 3 to 5 days after an exposure, although it can take as long as 21 days. People infected by a tick bite typically have a slow-healing skin sore (ulcer) and swollen glands (lymph nodes). In Massachusetts, cases occur most frequently on Cape Cod, Martha's Vineyard, and Nantucket.

## Do “natural” repellents work?

A number of plant-derived products are available for use as repellents. Limited information is available regarding the short and long term health effects and overall effectiveness of these products. The information that is available indicates that these products do not provide the same level or duration of protection as DEET or permethrin containing products.

## What should I do if I have a reaction to a repellent?

If you suspect that you or your child is having an adverse reaction to a repellent, wash the treated area, remove treated clothing, and call the Massachusetts Poison Control Center toll-free at 1-800- 222-1222. If you go to the doctor, take the repellent with you; the label information may be useful to your physician.



*Removal of embedded adult female deer tick*

## What should I do if I find a tick on myself?

The tick should be carefully removed as soon as possible. **The longer an infected tick remains attached to a person or animal, the higher the likelihood of disease transmission.** Use fine point tweezers to grip the mouthparts of the tick as close to the skin as possible. The tick should not be squeezed or twisted, but pulled straight outward with steady, gentle pressure. You *should not* apply kerosene, petroleum jelly, nail polish, or a hot match tip to remove the tick. These measures are not effective and may result in injury. Circle the calendar date and note where on the body the tick was removed. You may want to save the tick for identification. Your physician may choose to treat you following a deer tick bite. Notify your health care provider if you have been bitten by a deer tick or if you develop any unusual illness following a tick bite.

## What precautions should I take with repellents?

The two most common active ingredients in repellents are **DEET** (N-N-diethyl-meta-toluamide) and **permethrin**. These products will remain effective for many hours, so it is not necessary to frequently reapply them.

**Repellents containing DEET** can be applied to exposed skin and clothing. Some DEET products may damage certain fabrics. Read the product label before applying. DEET is effective in repelling ticks and insects when used according to the manufacturer's recommendations. Since DEET can be absorbed through the skin, and in rare cases causes illness, do not apply too much, do not apply to broken skin, and do not apply to skin that will be covered by clothing. Avoid applying in closed spaces, like cars or tents. When using repellents on young children, do not apply to their hands or faces, as children often rub their eyes and faces and put their fingers in their mouths. MDPH recommends that DEET not be used on infants; that repellents containing more than 10 to 15% DEET not be used on children; and that those containing more than 30 to 35% DEET not be used on anyone. After returning indoors, wash treated areas with soap and water, and launder treated clothing.

**Permethrin-containing products** kill ticks and insects that contact them. Permethrin products are not designed to be applied to the skin. Clothing should be treated and allowed to dry in a well-ventilated area prior to wearing. Because permethrin binds very tightly to fabrics, once the fabric is dry, very little of the permethrin gets onto the skin.

## Deer ticks: What diseases can they spread?

**Lyme disease** is caused by bacteria. Initial symptoms begin 3 to 30 days after a person is bitten by an infected deer tick and may include an expanding rash at the site of the bite and/or flu-like symptoms. If left untreated, the bacteria can spread to almost any site in the body and can cause arthritis, neurologic difficulties, and/or heart problems. Cases of Lyme disease occur throughout Massachusetts.



*Adult female deer tick*

**Babesiosis** is caused by a parasite that affects red blood cells. Most people who are infected will show no or only very mild signs of illness. Symptoms, when they do occur, begin gradually about 1 to 6 weeks after being bitten by an infected deer tick and can include fever, chills, headache, achy joints and muscles, fatigue, nausea, vomiting, abdominal pain, and dark urine. The elderly, and people without a healthy spleen or immune system are more likely to develop serious symptoms. In Massachusetts, cases occur most frequently on Cape Cod, Martha's Vineyard, and Nantucket.

**Human granulocytic ehrlichiosis (HGE)** is caused by bacteria that affect certain white blood cells called granulocytes. Symptoms typically appear suddenly 7 to 14 days after being bitten by an infected deer tick and can include fever, headache, muscle aches, chills, sweating, nausea, and vomiting. Because symptoms may become life-threatening, immediate treatment is necessary. The elderly, people with diabetes or collagen vascular disease, and people without a healthy immune system are more likely to develop serious symptoms. In Massachusetts, cases occur most frequently on Cape Cod, Martha's Vineyard, and Nantucket.

## How can I protect my family, my pets, and myself from tick bites?

**Prevention begins with you!** Follow these tips if you live, work, or spend leisure time in an area likely to have ticks:

- The single most important thing you can do is check yourself for ticks once a day. Favorite places ticks like to go on your body include areas between the toes, back of the knees, groin, armpits, and neck, along the hairline, and behind the ears. Remember to check your children and pets, too. Remove any attached tick as soon as possible.
- Stick to main pathways and the center of trails when hiking.
- Wear long-sleeved, light colored shirts and long pants tucked into your socks.
- Use repellents that contain DEET on your clothes or exposed skin, or those that contain permethrin on your clothes. (See additional information about repellents on page 6).
- Talk to your veterinarian about the best ways to protect your pets and livestock from ticks.

There is currently no human vaccine available to protect against Lyme disease or any other tickborne disease.



## How can I reduce the number of ticks around my home?

You don't have to be walking in the woods to be bitten by a tick. You can be in your own backyard! You can **reduce the number of ticks around your home** by following these tips:

- Keep grass cut short.
- Remove leaf litter and brush from around your home.
- Prune low lying bushes to let in more sunlight.
- Keep woodpiles and birdfeeders off the ground and away from your home.
- Keep the plants around stone walls cut short.
- Use a three-foot wide woodchip, mulch or gravel barrier where your lawn meets the woods and remind your children not to cross that barrier (see photo at right).
- Ask your landscaper or local nursery about plants to use in your yard that do not attract deer.
- Use deer fencing (for yards 15 acres or more).



*Create a barrier between your yard and the woods*

**If you choose to use a pesticide** to reduce the number of ticks on your property, hire a licensed applicator experienced with tick control. Your local landscaper or arborist may be a licensed applicator. In general, good tick control can be achieved with no more than two pesticide applications in any year. When selecting an applicator, ask if they will provide:

A written pest control plan that includes information on the pesticide to be used.  
Information about non-chemical pest control alternatives.  
Signs to be posted around the property after the application.